

01-03-2004

- 9 -

CLAIMS

1. A method of damping parasitic vibrations coming from the front axle assembly of a motor vehicle fitted with electric power steering, using a power-steering electric motor (1) controlled by an electronic computer that delivers an electrical setpoint current, taking into account various parameters, from which the power current of the power-steering electric motor is established, the damping method consisting essentially in:

- having available in the computer an electrical signal ( $\omega$ ) which possesses a component ( $\omega_f$ ) that is the image of the parasitic vibrations coming from the front axle assembly of the vehicle;

- processing said signal ( $\omega$ ) so as to isolate its component ( $\omega_f$ ) that is the image of the parasitic vibrations;

- calculating, from the parasitic component ( $\omega_f$ ) thus isolated, a correction current ( $I_c$ ) for correcting the aforementioned setpoint current; and

- applying the calculated correction current ( $I_c$ ) to the setpoint current ( $I$ ), determined by taking other parameters into account, in order to control the electric power-steering motor;

the electrical signal, used in the computer as signal "containing" the parasitic component, being an available signal relating to the electric power-steering motor, in particular the speed ( $\omega$ ) of the electric power-steering motor.

2. The method as claimed in claim 1, characterized in that the processing of the aforementioned signal ( $\omega$ ), for the purpose of isolating its component that is the image of the parasitic vibrations to be damped, is a filtering ( $F$ ) that lets through the high-frequency component or components and that eliminates however,

from this signal, the low-frequency component or components, especially those that are imposed by the driver of the vehicle in question.

5     3. The method as claimed in claim 1 or 2, characterized in that the calculation of the correction current ( $I_c$ ), from the isolated parasitic component ( $\omega f$ ), also takes into account at least one other parameter ( $V$ ).

10

4. The method as claimed in claim 3, characterized in that said other parameter is the speed ( $V$ ) of the vehicle.

15     5. The method as claimed in claim 3 or 4, characterized in that a parameter-assigned calculation of the correction current ( $I_c$ ) is a multiplication by a variable "gain" ( $K$ ), this being a function for example of the speed ( $V$ ) of the vehicle.

20

6. A method as claimed in claim 3 or 4, characterized in that the parameter-assigned calculation of the correction current ( $I_c$ ) is a calculation of the "transfer function" kind.

25

7. The method as claimed in any one of claims 1 to 6, characterized in that the final application of the calculated correction current to the setpoint current is a subtraction of the correction current ( $I_c$ ) from the setpoint current ( $I$ ) determined on the basis of other parameters, so as to deliver, as a result of this subtraction, the final setpoint current ( $I_t$ ), which, when transformed into a control current ( $I_p$ ), will control the electric power steering by correcting the vibrations coming from the front axle assembly of the vehicle.

30

35